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Contextual Teaching and Learning Strategies on Student Engagement

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Abstract: This study aims to examine the effect of Contextual Teaching and Learning (CTL) strategies on student engagement in the learning process at the junior high school level. CTL is a learning approach that links subject matter to the real-life contexts of students, thereby encouraging active participation and deeper understanding. Although the CTL approach has been widely applied in various educational contexts, there is still a gap in research that specifically examines its impact on overall student engagement, especially when viewed from cognitive, emotional, and behavioral aspects simultaneously. This study uses a quantitative approach with a survey method. Data collection techniques were carried out using a Likert scale questionnaire that had undergone validity and reliability tests. The research sample consisted of 94 ninth-grade students at SMP Negeri 21 Pesawaran who were selected using total sampling. Data analysis was performed using simple linear regression to determine the extent of the influence of CTL strategies on student engagement in the learning process. The results showed that CTL strategies had a positive and significant influence on student engagement ($p < 0.05$). In terms of cognitive aspects, students showed improvement in critical thinking, material exploration, and problem solving. Emotional aspects showed an increase in interest, motivation, and a sense of responsibility for learning. Meanwhile, in terms of behavior, students were more actively involved in discussions, demonstrated good group cooperation, and were disciplined in participating in learning activities. The CTL strategy is also in line with Buddhist teachings, such as in the Kalama Sutta and Sigalovada Sutta, which emphasize reflective, meaningful learning and respect for the role of the teacher. Thus, CTL is recommended as an effective approach to improving the quality of student engagement in the classroom.

Keywords: Student Engagement, Contextual Teaching and Learning (CTL) Learning Strategy

1. Introduction

Education is the main foundation in developing quality and competitive human resources. In Indonesia, the dynamics of education have undergone various changes over time [1]. Since independence, attention to improving the quality of education has continued to be a strategic priority in order to produce a generation that is not only

intellectually intelligent, but also has character and is adaptive to the changing times [2]. One important benchmark in measuring the quality of education is the extent of student engagement in the learning process [3]. High student engagement not only demonstrates enthusiasm for learning but also reflects the internalization of meaningful learning values, promotes deep understanding, and supports the development of critical, creative, and collaborative thinking skills.

However, expectations regarding the quality of student engagement in learning are not always in line with reality in the field. There are still many students who show low participation in learning activities, characterized by minimal activity in discussions, low enthusiasm for subject matter, and a dominance of dependence on teachers [4]. Various studies show that student engagement in learning remains a fundamental issue that requires special attention [5]. The factors that influence low student engagement are diverse, ranging from internal aspects such as lack of confidence and motivation to learn, to external factors such as monotonous learning methods, minimal teacher-student interaction, and weak support from the learning environment, both from school and family [6]. In fact, technical challenges due to online learning after the pandemic have also exacerbated the condition of student engagement in the formal education process.

This reality shows that the conventional learning system, which tends to emphasize one-way information transfer, is not effective enough to stimulate students' interest in learning [7]. The mismatch between the learning approach and the context of students' real lives makes learning meaningless and formalistic [8]. Therefore, there is an urgent need to implement learning strategies that can bridge the subject matter with students' life experiences, so that students feel personally involved in every learning activity [9]. One relevant approach to address this challenge is Contextual Teaching and Learning (CTL), which emphasizes the importance of linking subject matter to real-life situations [10]. CTL not only stimulates students' cognition but also encourages affective and behavioral engagement, which ultimately improves the quality of learning holistically [11].

Considering the urgency and complexity of student engagement issues, this study aims to explore and analyze the effect of implementing Contextual Teaching and Learning (CTL) strategies on student engagement at the junior high school level, particularly at SMP Negeri 21 Pesawaran. This study is designed to measure the extent to which the contextual teaching and learning (CTL) learning strategy contributes to building overall student engagement cognitively, affectively, and behaviorally. The results of this study are expected to provide practical contributions for educators in designing contextual, relevant, and inspiring learning. In addition, theoretically, the findings of this study will strengthen the framework of thinking about the importance of context-based learning in improving the quality of student engagement in the 21st century education era.

The novelty of this research lies in its focus on analyzing the influence of contextual teaching and learning (CTL) strategies on student engagement specifically at the junior high school level, which is still relatively rarely studied compared to elementary and high school levels. Previous studies have mostly highlighted the influence of CTL on learning outcomes or specific skills such as speaking and understanding mathematical concepts, and most of them were conducted at the elementary or high school levels [12]. This study

also enriches the scientific discourse by presenting the latest data on the level of student engagement from year to year, which has fluctuated and tended to increase negatively [13]. By placing the contextual teaching and learning (CTL) strategy as the main variable tested quantitatively against the variable of student engagement at SMPN 21 Pesawaran, this study offers a new perspective on the effectiveness of learning strategies that are oriented towards the reality and needs of students, so that the results are expected to be implemented more widely in education policies and practices at the junior high school level.

Through this approach, students are not only positioned as recipients of information, but also as active subjects in a contextual and meaningful learning process. Teachers act as facilitators who bridge students' life experiences with subject matter, creating a space for collaborative and reflective interaction. Thus, this research is not only academically relevant but also strategically practical, especially in efforts to improve the quality of Indonesian education oriented toward strengthening students' character and competencies comprehensively.

2. Method

This study uses a survey method with a quantitative approach that aims to measure the relationship between the Contextual Teaching and Learning (CTL) strategy and student engagement in the learning process. Data collection techniques were carried out by distributing Likert scale questionnaires to 94 respondents, who were students of SMP Negeri 21 Pesawaran. The population in this study was all 94 students of SMP Negeri 21 Pesawaran. The entire population was used as the research sample using the total sampling technique, which is a sampling technique where all members of the population are used as samples. The research process began with field observations to identify problems occurring in the learning process. Next, the background was prepared, the problems were identified, and the problem formulation was based on relevant theories, particularly those related to the effect of contextual teaching and learning (CTL) strategies on student engagement. The researcher then determined the research variables, prepared the instrument grid, and collected data using a questionnaire instrument. The data obtained were analyzed using simple linear regression techniques to determine the extent of the influence of the contextual teaching and learning (CTL) strategy on student engagement, which included cognitive, affective, and behavioral dimensions. The results of the analysis were then used as the basis for drawing conclusions and recommendations from this study.

3. Results and Discussion

3.1. Validity Test

The validity test of the instrument was conducted to determine the extent to which the items in the questionnaire were able to accurately measure the intended variables. The validity test was conducted on April 16, 2025, on 30 respondents from grade IX at SMP Negeri 1 Waway Karya, East Lampung Regency. Based on the test results, out of a total

of 80 statement items developed, 74 items were declared valid and 6 items were declared invalid. The invalid items were numbers 4, 5, 10, 11, 20, and 29. The validity of the items was determined by comparing the calculated r value of each item with the table r value at a significance level of 0.05 with a total of 30 respondents (n), which was 0.361. An item was declared valid if the calculated r ≥ table r, and conversely, it was declared invalid if the calculated r < table r. Thus, the research instrument used in this study consisted of 74 statement items that met the validity requirements.

3.2. Reliability Test

The reliability test was conducted to determine the consistency or reliability of the instrument in measuring the variables under study. The test was conducted on 74 items that had previously been declared valid. Based on the results of the analysis using SPSS for Windows version 27 software, a reliability coefficient value of 0.946 was obtained using Cronbach's Alpha method. This value indicates that the instrument has very high reliability, as it exceeds the minimum limit of 0.60, which is generally used as the criterion for an instrument to be considered reliable.

Thus, it can be concluded that the instrument used in this study has met the requirements for good reliability and can be used for consistent data collection. The reliability test results are presented in the following table:

Table 1.1 Instrument Reliability Test

Reliability Statistics	
Cronbach's Alpha	0.946
Number of Items	74

Source: Results of data processing in 2025 using SPSS version 27

3.3. Homogeneity Test

The homogeneity test was conducted to determine whether the variance of two or more data groups was homogeneous or uniform. This test is an important prerequisite before conducting parametric statistical analyses such as independent sample t-tests or analysis of variance (ANOVA), where one of the assumptions is the equality of variance between data groups. The decision criterion in the homogeneity test is that if the significance value (Sig.) is > 0.05, then the variance between groups can be declared homogeneous. The results of the homogeneity test in this study were reviewed from the Test of Homogeneity of Variances output using SPSS version 26. Based on the analysis of the Contextual Teaching and Learning (CTL) learning strategy data and student involvement, significance values were obtained for several approaches, including: based on the mean of 0.067, based on the median of 0.887, the median with a degree of freedom adjustment of 0.873, and based on the trimmed mean of 0.098. All significance values are greater than 0.05, so it can be concluded that the variance of the data between groups is homogeneous. The results of the homogeneity test are presented in Table 1.2:

Table 1.2 Homogeneity Test Results

Variable	Approach	Levene Statistic	df1	df2	Sig.
CTL Learning Strategy with Student Involvement	Based on Mean	1.632	25	53	0.067
	Based on Median	0.640	25	53	0.887
	Based on Median and with adjusted df	0.640	25	31,966	0.873
	Based on Trimmed Mean	1,572	25	53	0.098

Source: Results of data processing in 2025 using SPSS version 26

Thus, the homogeneity test shows that the data from both variables are homogeneous and meet the requirements for further analysis.

3.4. Normality Test

The normality test was conducted to determine whether the data in this study was normally distributed, which is one of the prerequisites for parametric statistical analysis. The test was conducted using the One-Sample Kolmogorov-Smirnov test at a significance level of 0.05 or 5%. The data used in this test came from 94 respondents.

Based on the results of the normality test, it was found that the significance value (Asymp. Sig. 2-tailed) was 0.200. Because this value is greater than 0.05 (0.200 > 0.05), it can be concluded that the residual data is normally distributed. This indicates that the normality assumption has been met, so the data is suitable for analysis using parametric statistical tests. The results of the normality test using the One-Sample Kolmogorov-Smirnov method can be seen in Table 1.3 below:

Table 1.3 Normality Test

One-sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		94
Normal Parameters[ab]	Mean	.0000000
	Std. Deviation	14.07515241
Most Extreme Differences	Absolute	.057
	Positive	.057
	Negative	-.045
Test Statistic		.057
Asymp.Sig. (2-tailed)		.200[c,d]
Test distribution is Normal.		
Calculated from data.		
Lilliefors Significance Correction.		
This is a lower bound of the true significance		

Source: Data processed in 2025 using SPSS version 26.

Based on the output results in the one-sample Kolmogorov-Smirnov test column above, it can be seen that the significance value (2-tailed) is 0.200. This value is greater

than 0.05, so it can be concluded that the population data from the measurement distribution, namely the questionnaire, is normally distributed. To determine the positive effect between the contextual teaching and learning strategy and student engagement, a p-plot graph is used, as shown in the following figure.

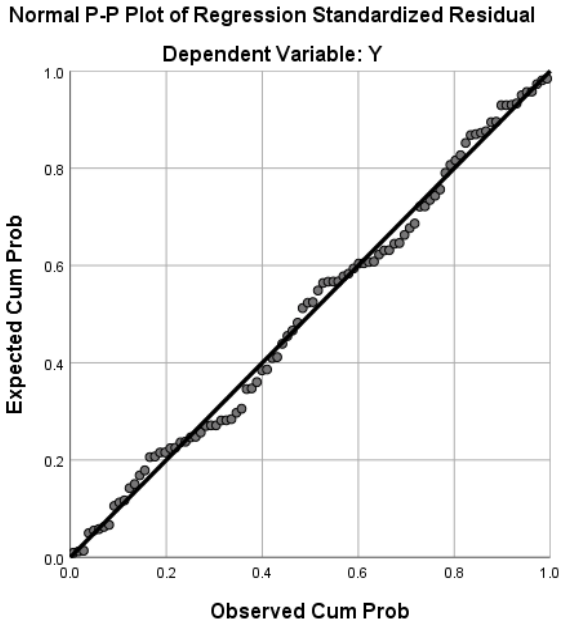

Figure 1. P Plot of Regression Standardized Residual Source: SPSS version 26 data processing output

3.5. Linearity Test

To ensure that the relationship between the independent variable (Contextual Teaching and Learning or CTL strategy) and the dependent variable (student engagement) meets the linearity assumption, a linearity test was conducted. This test is important in regression analysis because a linear regression model can only be used validly if the relationship between the two variables is indeed linear. The results of the linearity test are presented in Table 1.4 below:

Table 1.4. Linearity Test

Variable	Source of Variation	Sum of Squares	df	Mean Square	F	Sig.
Student involvement * CTL learning strategy	Between Groups (Combined)	10571.742	40	264,294	1,281	0.198
	Linearity	3084.086	1	3084.086	14.946	0.000
	Deviation from Linearity	7487.655	39	191,991	0.930	0.589
	Within Groups	10,936.567	53	206,350	—	—
	Total	21,508,309	93	—	—	—

The linearity test results show that the significance value in the Linearity row is 0.000, which means < 0.05. This indicates that there is a significant linear relationship between the CTL learning strategy and student engagement. Meanwhile, the significance value in the Deviation from Linearity row is 0.589 (> 0.05), indicating that there is no significant deviation from linearity. In other words, there is no significant non-linear relationship pattern between the two variables. Based on the linearity test results, it can be concluded that the relationship between the CTL learning strategy and student engagement meets the linearity assumption. Therefore, the simple linear regression model used in this study is valid and can be interpreted further.

3.6. Hypothesis Testing (Simple Linear Regression)

Hypothesis testing in this study was conducted using simple linear regression analysis to determine the effect of Contextual Teaching and Learning (CTL) strategies on student engagement. Based on the results of SPSS version 26, the regression equation obtained was: Y = 66.279 + 0.507X. The constant value of 66.279 indicates that if there is no application of the CTL strategy (X = 0), student engagement (Y) will be at 66.279. Meanwhile, the regression coefficient of 0.507 indicates that every one-unit increase in the application of the CTL strategy will increase student engagement by 0.507 units. This positive coefficient indicates a direct relationship between the two variables. The t-test results show that the t-value of 3.924 is greater than the t-table value of 1.662 at a degree of freedom (df) = 92, with a significance value of 0.000 < 0.05. Therefore, H_0 is rejected and H_a is accepted, which means that there is a significant effect of the CTL learning strategy on student engagement. Furthermore, the ANOVA test results also support this finding, with a calculated F value of 15.400 and a significance value of 0.000. Because the significance value is below 0.05, the regression model is statistically significant and can be used to predict the level of student engagement based on the application of the CTL learning strategy.

Table 1.5 Regression Equation Output

Model	Unstandardized Coefficients (B)	Std. Error	Beta	t	Sig.
(Constant)	66.279	17,008	—	3,897	0
CTL Learning Strategy	0.507	0.129	0.379	3.924	0.000

Source: Data processing results for 2025 using SPSS Version 26

To determine the significance of the regression model as a whole, an analysis of variance (ANOVA) test was conducted. This test aims to evaluate whether the constructed regression model can significantly explain the variation that occurs in the dependent variable, namely student engagement. The ANOVA test results shown in Table 1.6 below provide an overview of the contribution of the independent variable, namely the Contextual Teaching and Learning (CTL) strategy, to the total variation in student engagement observed.

Table 1.6 ANOVA Analysis Output

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	3084.086	1	3084.086	15,400	0.000
Residual	18,424.222	92	200,263	—	—
Total	21,508.309	93	—	—	—

Source: Results of data processing in 2025 using SPSS version 26

Meanwhile, the results of the coefficient of determination analysis are shown in Table 1.6. The R Square value of 0.401 indicates that the contextual teaching and learning (CTL) learning strategy contributes 40.1% to student engagement. Thus, it can be concluded that 40.1% of the variation in student engagement can be explained by the contextual teaching and learning (CTL) learning strategy variable, while the remaining 59.9% is influenced by other factors outside the scope of this study.

Table 1.7 Determination Coefficient Values (R Square)

Model	R	R Square	Adjusted R Square	Standard Error of the Estimate
1	0.633	0.401	0.395	7.076

Source: Results of data processing in 2025 using SPSS version 26

Thus, it can be concluded that the Contextual Teaching and Learning (CTL) strategy has a positive and significant effect on the engagement of students at SMP Negeri 21 Pesawaran. The application of this strategy has been proven to contribute significantly to increasing students' cognitive, affective, and behavioral engagement in the learning process.

3.7. Discussion

The results of this study indicate that the Contextual Teaching and Learning (CTL) strategy has a significant effect on student engagement in the learning process. This is reflected in the coefficient of determination (R Square) value of 0.401, which shows that 40.1% of the variation in student engagement is influenced by the implementation of the contextual teaching and learning (CTL) strategy. The remaining 59.9% is likely influenced by other external factors such as family conditions, students' personal characteristics, teachers' teaching styles, and the social and cultural environment of the school. These results confirm that learning strategies designed to relate the material to real-life contexts have a substantial impact on increasing student participation and engagement emotionally, cognitively, and behaviorally. The contextual teaching and learning (CTL) learning strategy places students as active subjects in the learning process [14]. Students do not only listen passively to the teacher's explanations, but are also given space to experience, observe, reflect, and apply knowledge in their daily lives. This approach allows for a deeper and more relevant internalization of learning, while fostering a sense of responsibility and independence in students. The contextual teaching and learning (CTL) strategy also creates a collaborative, contextual learning environment that

encourages critical thinking, so that students feel more motivated and actively involved in the learning process.

These findings are in line with research conducted by Mangunsong [15], which shows that contextual learning can increase motivation, conceptual understanding, and student learning outcomes through increased active involvement. Similarly, Saádah [16] states that contextual learning is an approach that stimulates the brain to form meaningful patterns based on real experiences. In this context, students do not merely memorize information, but understand the meaning of that information through direct interaction with their life situations. Furthermore, the implementation of contextual teaching and learning (CTL) strategies is also consistent with the principles of Buddhist teachings as stated in the Kalama Sutta, which emphasizes the importance of learning based on understanding, experience, and critical consideration, rather than mere dogmatic acceptance [17]. In this sutta, the Buddha teaches that a person should only believe in and adopt a teaching after being convinced through personal experience that it brings benefits and avoids suffering [18]. This is in line with the essence of the contextual teaching and learning (CTL) strategy, which emphasizes the connection between theory and practice and encourages students to build knowledge based on reflective and relevant experiences.

From an educational perspective, the Contextual Teaching and Learning (CTL) learning strategy represents a paradigm shift in learning from a behavioristic approach to a constructivist approach [19]. In the constructivist approach, learning is viewed as an active process in which students construct their own understanding based on experience and interaction with the environment [20]. The contextual teaching and learning (CTL) learning strategy facilitates this process through the direct involvement of students in real-world contexts, making learning more meaningful compared to conventional learning, which tends to be abstract and detached from everyday life. This has been proven to increase students' overall learning engagement cognitively (through conceptual understanding), affectively (through interest and motivation), and behaviorally (through active participation in learning activities) [21].

Pedagogically, the contextual teaching and learning (CTL) learning strategy also encourages the application of collaborative learning, inquiry, problem solving, reflection, and authentic reinforcement, all of which are included in the seven main components of the contextual teaching and learning (CTL) learning strategy [22]. In the context of this study, the application of this strategy had a positive impact on student engagement because it was able to create a more interactive and relevant classroom atmosphere. This process allows teachers to transform from knowledge transmitters to learning facilitators, which directly supports the development of learner autonomy and student learning responsibility [23]. From a Buddhist perspective, experience-based learning as developed in the contextual teaching and learning (CTL) strategy is deeply aligned with the principles of Buddhist teachings, particularly in its existential and ethical approach to knowledge [24]. The Kalama Sutta teaches that truth should not be accepted solely on the basis of authority, tradition, or doctrine, but must be examined through personal experience and clear reasoning: "When you yourself know that these things are unwholesome, blameworthy, censured by the wise, and if done bring about suffering and

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its cessation ( ), then you should abandon them." This principle emphasizes the importance of active, reflective, and mindfulness-based learning (sati) [25].

Furthermore, the contextual teaching and learning (CTL) learning strategy is also in line with the Buddhist principle of Yoniso Manasikāra or wise mindfulness. Yoniso Manasikāra is a form of careful, deep, and contextual attention to objects or experiences, which is essential in forming understanding and wisdom (paññā) [25]. When students are encouraged to relate the subject matter to their own lives, they not only develop academic skills, but also inner qualities such as awareness, moral responsibility, and self-understanding values that are highly regarded in Buddhist education [26]. In addition, the values in the Sigalovada Sutta also provide an ethical framework for the learning process. This sutta teaches the principles of social relationships and responsibility, including those between teachers and students, as well as the importance of discipline, respect, and hard work as the foundation for growth [27]. The application of contextual teaching and learning (CTL) strategies, which emphasize group work, reflection, and active engagement, indirectly shapes students' character in accordance with Buddhist ethical values that balance intellectual and moral aspects.

Thus, the contextual teaching and learning (CTL) strategy is not only pedagogically relevant, but also in line with the philosophical and ethical principles of Buddhist teachings. The implementation of the contextual teaching and learning (CTL) strategy is capable of creating a learning space that not only produces conceptual knowledge, but also educates students to become conscious, responsible individuals with spiritual and social depth. In the context of modern education that leads to the formation of 21st century skills, this approach offers a synthesis between intellectual intelligence and inner wisdom.

4. Conclusion

Based on the results of research and data analysis that has been conducted, it can be concluded that the Contextual Teaching and Learning (CTL) learning strategy has a positive and significant effect on student engagement in the learning process at SMP Negeri 21 Pesawaran. This strategy has been proven to increase student engagement cognitively, affectively, and behaviorally through a learning approach that links lesson material to the context of students' real lives. The application of CTL encourages students to think critically, understand the material more deeply, and be actively involved in learning activities. In addition to strengthening the pedagogical dimensions of meaningful, active, and reflective learning, the CTL strategy is also in line with the values of B uddha's teachings, particularly in the Kalama Sutta and Sigalovada Sutta, which emphasize the importance of direct experience, moral responsibility, and the development of awareness. Thus, the CTL strategy can be recommended as an effective learning approach to create an interactive, relevant, and ethically valuable learning environment, as well as to encourage the formation of students who are not only intellectually superior but also possess moral and spiritual wisdom.

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